

CLAIMS:

1. A display apparatus (1) comprising:
 - An electrophoretic medium (6) comprising charged particles (6) in a fluid;
 - A plurality of picture elements (2);
 - A first and second electrode (3,4) associated with each picture element (2) for receiving a potential difference; and
 - Drive means arranged to supply a sequence of picture potential differences to each of said picture elements (2) so as to cause said charged particles (6) to move and change the optical state of a respective picture element (2) substantially continuously between two extreme grey scales in accordance with an image to be displayed, wherein said picture potential differences have a non-zero average dc value, the polarity of which is selected to increase the level of brightness of one said extreme grey scales or to increase the contrast ratio of the image displayed by said apparatus.
2. Apparatus according to claim 1, comprising a plurality of charged particles (6) in said fluid, one or some of which are of a first colour and one or some of the remaining of which are of a second colour.
3. Apparatus according to claim 2, wherein the particles (6) of said first colour are charged with a first polarity and the particles (6) of said second colour are charged with a second, opposite polarity.
4. Apparatus according to claim 3, wherein application of picture potential differences having an average dc voltage of a polarity opposite to that of the particles (6) of said first colour causes an increase in the contrast ratio of an image displayed by the apparatus.
5. Apparatus according to claim 3 or claim 4, wherein application of picture potential differences having an average dc voltage of a polarity opposite to that of the

particles (6) of said second colour causes an increase in the brightness of an image displayed by the apparatus.

6. Apparatus according to claim 4 or claim 5, wherein said first colour is
5 substantially black and said second colour is substantially white.

7. Apparatus according to any one of the preceding claims, wherein the polarity
of the average dc voltage is user-defined according to whether it is required to maximise
brightness or contrast ratio of an image displayed by the apparatus.

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8. Apparatus according to claim 7, comprising selection means to enable a user
to select whether to maximise brightness or contrast ratio of an image displayed by the
apparatus.

15 9. Apparatus according to claim 1, wherein said fluid is coloured.

10. Apparatus according to claim 9, comprising a single charged particle in said
coloured fluid.

20 11. A method of increasing brightness or contrast ratio in a display apparatus
comprising:

- An electrophoretic medium (5) comprising charged particles (6) in a fluid;
- A plurality of picture elements (2);
- A first and second electrode (3,4) associated with each picture element (2) for
25 receiving a potential difference; and
- Drive means arranged to supply a sequence of picture potential differences to each of
said picture elements (2) so as to cause said charged particles (6) to move and change
the optical state of a respective picture element (2) substantially continuously between
two extreme grey scales according to an image to be displayed;

30 wherein the method comprises supplying picture potential differences which
have a non-zero average dc value, the polarity of which is selected to increase the level of
brightness of one said extreme grey scales or to increase the contrast ratio of the image
displayed by said apparatus.

12. Drive means for driving a display apparatus (1) comprising:
- An electrophoretic medium (6) comprising charged particles (6) in a fluid;
 - A plurality of picture elements (2); and
 - A first and second electrode (3,4) associated with each picture element (2) for
- 5 receiving a potential difference;
- Drive means being arranged to supply a sequence of picture potential differences to each of said picture elements (2) so as to cause said charged particles (6) to move and change the optical state of the respective picture elements (2) substantially
- 10 continuously between two extreme grey scales according to an image to be displayed, wherein said picture potential differences have a non-zero average DC value, the polarity of which is selected to increase the level of brightness of one of said extreme grey scales or to increase the contrast ratio of the image displayed by said apparatus (1).
13. A drive waveform for driving a display apparatus (1) comprising:
- An electrophoretic medium comprising charge particles (6) in a fluid;
 - A plurality of picture elements (2);
 - A first and second electrode (3,4) associated with each picture element (2) for
- 15 receiving a potential difference; and
- Drive means arranged to supply said drive waveform to said apparatus, said drive
- 20 waveform comprising a sequence of picture potential differences for application to each of said picture elements (2) so as to cause said charged particles (6) to move and change the optical state of a respective picture element (2) substantially continuously between two extreme grey scales according to an image to be displayed, wherein said picture potential differences have a non-zero average DC value, the polarity of which
- 25 is selected to increase the level of brightness of one of said extreme grey scales or to increase the contrast ratio of the image displayed by said apparatus.